

I. Executive Summary/Inquiry Submittal Format DWR WAREHOUSE**a. Project Title and Applicant Name** 97 JUL 28 PM 3:50

Project Epigenesis

Yolo County Flood Control and Water Conservation District

b. Project Description and Primary Biological/Ecological Objectives

As a highly adaptive, invasive species, tamarisk has pervaded the entire course of Cache Creek within the past 15 years, decimating the existing riparian corridor habitat. The problem is particularly urgent in the last six miles of the creek where dense populations of tamarisk are creating monocultures completely displacing the riparian habitat. Less than 10% of the riparian forests exist. The remaining remnants are in poor condition. An Epigenesis, regeneration of Cache Creek's critical riparian habitat is needed now! A 1996 Baseline Data on the Plant Communities of Cache Creek indicates the extreme likelihood that Tamarisk will continue its downstream migration at a rapid rate and enter the Sacramento River and Delta systems just West of Sacramento. The Tamarisk Control and Replacement Project will coordinate under the leadership of Yolo County Flood Control and Water Conservation District, the Department of Water Resources, the Yolo County Conservation Corps, the California Conservation Corps to provide a systematic Tamarisk control and replacement program at key stretches of Cache Creek's riparian corridor. The project will provide immediate action in the lower six miles of the Cache Creek waterway during the first year. Year two will focus on the upper reaches of the Creek with maintenance and monitoring of the first year's work. This is essential to ensure the quick disposal of new plants and catch any missed growth. Year three will work with the midsections of the creek. All phases of this project will include revegetation efforts to mitigate the tamarisk's inverse affect on beneficial native species. Monitoring will insure quality control and data collection for effectiveness.

This project will collaborate and coordinate with the research blocks, public education and trial eradication efforts proposed by the Cache Creek Conservancy. The findings of the Conservancy's efforts will be incorporated within Yolo County Flood Control's program. The education efforts of the Conservancy's project will provide the land owner education component which is essential to cooperation and eventual complete eradication of Tamarisk on Cache Creek.

c. Approach/Tasks/Schedule

The approach will be simple; a systematic eradication program, in conjunction with revegetation and followed by monitoring for effectiveness and with an accompanying maintenance program for a period of three years.

<u>Task</u>	<u>Schedule (weather permitting)</u>	<u>Days</u>
Year 1		
Lower 6 miles eradication/cleaning	September - October	60/crew
Lower 6 miles - replant	November - March 9	40
	Sub Total	100
Year 2		
Upper 6 miles eradication/cleaning	April - May	40
Upper 6 miles replant	November - March	20
Lower 6 miles - Year 1 work		
Monitor & Maintain	June - July	40
Replant as needed	October	20
	Sub Total	120
Year 3		
Central 4 miles eradicate/clean	April - May	60
Central 4 miles replant	November - March	20
Year 1 Monitor & Maintain	May	20
Replant	November	15
Year 2 Monitor & Maintain	June - July	15
Year 2 Replant as needed	October - November	10
	Sub Total	140

d. Justification for Project and Funding by CALFED

The riparian habitat of the Cache Creek waterway is highly damaged by a variety of human use induced stressors which have included aggregate mining, agricultural practices and development. An additional primary stressor is the significant encroachment of invasive Tamarisk. A 1996 baseline vegetation study found tamarisk to have out competed beneficial natives to the extent that, "Of the sites observed in this study, *Tamarisk parviflora* was found at all but one. It is clear that this non-native shrub is a dominant plant within the Cache Creek Corridor. The data...suggests that the amount of Tamarisk found growing in the shrub layer, effects the native plant populations." (Burmester, Tracy, Cache Creek Vegetation Baseline Study, 1996). A systematic action which will remove, control, and replace this invasive species will assist in the overall improvement of the Cache Creek ecosystem while decreasing the systems vulnerability to colonization to other exotic species and further degradation from the Tamarisk. This effort will also assist with prevention efforts to keep this species from stressing the Sacramento River ecosystem and subsequently the Delta.

e. Budget Costs and Third Party Impacts

Program costs are for direct sustained effort over a period of three years to provide an effective Tamarisk Control and Replacement program at the critical head waters, basin and midsection of the Cache Creek Corridor. The total cost for three years is \$981,363.00. Project directly impacts the quality of the riparian corridor habitat of Cache Creek, which impacts the aquatic and terrestrial species which utilize this habitat, while providing broad ecosystem benefits to the Cache Creek Watershed. The project impacts the Sacramento and Bay-Delta ecosystems through intervention in the eastward and southward migratory invasiveness of Tamarisk. In general there is benefit to the approximately 60,000 people who live within Cache Creek's watershed through the secondary effects of a quality riparian system on the quality of the surrounding environment.

f. Applicant Qualifications

Yolo County Flood Control and Water Conservation District manages the water resources of the Cache Creek watershed for agricultural and environmental purposes. The agency has a long history of dedication to the conservation of the waters and habitat of Yolo County. These efforts include a comprehensive study of Flooding and Environmental Issues in collaboration with the U.S. Army Corps of Engineers. The District also commissioned an intensive baseline vegetation study of the Plant Communities of Cache Creek in 1996 which determined the severity of the Tamarisk infestation and resultant detrimental trend on the native plant populations of the Cache Creek Corridor leading to degradation of the aquatic and terrestrial habitat of the riparian corridor.

g. Monitoring and Data Evaluation

The project will utilize the monitoring techniques of the Baseline Data of the Plant Communities of Cache Creek 1996 Study to insure that data collection is consistent with the baseline and provides a clear picture of the effectiveness of the Projects activities.

h. Local Support/Coordination with other Programs/Compatibility with CALFED objectives

The project is supported by the Yolo County Superintendent of Schools, which works collaboratively with both agencies to provide supporting environmental education opportunities to the 23,000 students of Yolo County. The California Conservation Corps has a long history of dealing effectively with environmental issues requiring immediate action accompanied by quality long term results. The Department of Water Resources is responsible for the maintenance of the lower 6 miles of the Cache Creek Corridor and Sedimentation Settling Basin. The department sees this project as critical to restoring a functioning ecosystem which provides quality habitat and improved water load capabilities during peak flows. All agencies share a concern that without this immediate response Tamarisk will soon make its presence known in the Yolo Bypass, Yolo Migratory Flyway, The Yolo Basin Foundation's project area, Sacramento River and then migrate to the Delta. Costs for eradication and control can only be estimated at many times the cost of this proposed effort do to the size and scope of the potentially affected area.

II. Title Page

- a. Title of Project:** Cache Creek Epigenesis
b. Name of applicant/principle investigator(s); address; phone/fax/E-mail; organizational, institutional or corporate affiliations of applicant/principle investigator(s)

Yolo County Flood Control and Water Conservation District
34274 State Hwy 16
Woodland, CA 95695
Phone: (916) 662-0265
Fax: (916) 662-4982

Association of California Water Agencies (ACWA), California Native Grass Association
California Central Valley Flood Control Association, California Water Resources
Association, Central Valley Project Water Association, Floodplain Management
Association, National Ground Water Association, Soil and Water Conservation Society &
Yolo Basin Foundation

- c. Type of organization and tax status**
Special District, Tax Exempt

- d. Tax Identification Number and/or Contractor license, as applicable**
94-165820

- e. Technical and Financial Contact person(s), address, phone/fax/ e-mail**
James Eagan, General Manager
Christy Barton, Assistant General Manager
Yolo County Flood Control and Water Conservation District
34274 State Hwy 16
Woodland, CA 95695
Phone: (916) 662-0265
Fax: (916) 662-4982

- f. Participants/Collaborators in implementation**
Yolo County Flood Control and Water Conservation District
California Conservation Corps, Yolo County Probation Department,
Department of Water Resources, Bureau of Land Management
Yolo County Superintendent of Schools Project H.A.W.K.
City of Woodland

g. Monitoring and Data Evaluation

Monitoring and data evaluation will follow the same methodology as the 1996 Baseline Data on the Plant Communities of Cache Creek. Techniques will include use of aerial slides taken annually by the USDA Soil Conservation Service, mapping of vegetation communities and ground proofing to verify findings, including survival patterns for replanted vegetation. Monitoring and data collection will utilize these techniques to build a solid base of information which will document over time the effectiveness of this effort in reversing the encroachment and dominance of Tamarisk along the Cache Creek Corridor. The work will also provide valuable and practical field knowledge for the length of time and care required to reverse the loss of native terrestrial habitat along riverine corridors to the point where the invasive nature of Tamarisk is significantly minimized or eliminated.

- h. RFP Project Group Type:** Group 3 - non construction habitat restoration,
monitoring and data collection

III. Project Description (no more than 6 pages plus maps and /or figures)

a. Project Description and Approach

Under the leadership of Yolo County Flood Control and Water Conservation District, the combined resources and expertise of the California Department of Water Resources, the California Conservation Corps, the Yolo County Conservation Corps, will effect an intensive systematic Tamarisk/Arundo control and riparian habitat regeneration effort at key stretches of Cache Creek's riparian corridor. Utilizing the expertise and trained manpower of the California Conservation Corps, the project will provide immediate action to 1) contain and reduce nonnative plant species, with primary emphasis on Tamarisk and Arundo along critical sections of Cache Creek, 2) replace nonnative species with appropriate native species to restore riparian habitat along the creek's corridor, 3) maintain and monitor removal and restoration efforts to impede reinfestation of non-native species (particularly Tamarisk and Arundo) in the Creek and 4) continue to build quality plant community data for continuing restoration efforts by other stakeholders.

Intensive work will focus in the lower six miles of the Cache Creek waterway during the first year. This area has been selected as a high priority for its proximity to the Yolo Bypass, the Sacramento River, the Yolo Basin Foundation, and its importance as a component of the Pacific Flyway. The existing habitat area is characterized by the US Army Corps study as having some value to wildlife, limited by lack of contiguous habitat, adjacent land use, size, and/or invasion of nonnative vegetation. The 1996 Baseline Study of Plant Communities on Cache Creek further emphasizes the need for quick action to salvage what minimal habitat remains, mitigate the damage already incurred as a result of dominance by nonnative species and prevent the further migration of Tamarisk and Arundo toward the Sacramento River and resultant Delta.

The U.S. Army Corps of Engineer's Cache Creek Environmental Restoration Reconnaissance Report divides the corridor into seven reaches. (Attachment 1) Year One will focus efforts on the lower six miles of Reach 1. Year Two will focus efforts on critical areas of reaches 3, 4 and 7. Reach 7 has widespread tamarisk and naturally occurring boron. Lessons from the field during Year One efforts would be combined with best practices gathered from similar projects and field trials by the Cache Creek Conservancy, to determine the final selection of areas in the upper watershed. Selection of sites will occur as a joint decision with BLM and USFWS. Year Three will build upon best practices garnered from the previous two years to apply the same approach to critical areas in reaches 2 and 3. Specifically the areas immediately to the west and east of the old Moore Dam site, which contain some of the best remnant riparian vegetation.

Year One efforts will commence at the western edge of the Department of Water Resources Levee System which contain the lower six miles of the Cache Creek Corridor. A highly trained crew of 15 California Conservation Corps Members and Supervisors will utilize a proven Tamarisk eradication method, moving downstream until they have worked through the Cache Creek Settling Basin. They will employ the "cut and paint" method which consists of hand cutting appropriate primary branches of the tamarisk plant, followed immediately by a hand application (painting) with the appropriate herbicide. Currently used substances are Roundup, G4 and Rodeo (for application in or near aquatic situations). Their efforts will immediately be followed by a crew of Yolo County Conservation Corps members who will completely clear and clean all debris from the creek's corridor for appropriate disposal. Although labor intensive, this activity is essential to prevent Tamarisk reinfestation from clipping regeneration.

Once affected areas have been cleared and cleaned, appropriate native riparian species will be replanted to initiate the regeneration of shaded riverine aquatic habitat. Per the recommendations of the US Army Corps of Engineers Reconnaissance Report revegetation efforts will focus on a 15 meter width on both sides of the corridor. Attention to this portion of the corridor is important in the establishment of shaded riverine habitat. This habitat is essential as an important source of nutrients in the streams and assists in the maintenance of water quality and characteristics such as temperature, oxygen availability, and in-stream habitat essential to migratory and non-migratory

native species. Where feasible appropriate California Native Plants raised and donated by Yolo County's various K-12, Community College, University, and Community environmental groups will be utilized. Led by the Yolo County Superintendent of Schools, this approach will provide a positive context for creating an awareness of the importance of riparian systems along Cache Creek and build local support through community action by a broad base of Yolo County residents of all ages.

Baseline data on the number, location and type of species replanted will be kept as will data on the amount of Tamarisk and Arundo removed. Maintenance and monitoring of the first year's work will occur in June and July of 1998 when water flows are at their lowest. This is essential to ensure the quick disposal of new plants deposited during winter flows and catch any missed growth. Replant efforts will occur as needed in late October to early November and possibly into January or February, pending advantageous weather conditions and severity of winter flows.

Year two will focus on the upper reaches of the Creek. Non-native species such as Tamarisk and Arundo are frequently aided in their downstream migrations by high water flows. Again removed plantings will be replaced by appropriate California Natives so as to initiate the regeneration of urgently needed Riparian Forest along the Cache Creek Corridor. Particular attention will be paid toward maintaining the plantings from Year One's efforts. Data collection pertinent to regeneration of non-native species, survival of new plantings and increased water carrying capability of Cache Creek will be an integral component of Year Two. Year Three will work with the midsections of the creek. High quality riparian forest remnants such as those located at the Moore Sanctuary will receive particular emphasis. All phases of this project will include revegetation efforts to mitigate the tamarisk's inverse affect on beneficial native species. As with Year Two, monitoring of previous efforts will insure quality control and data collection for effectiveness.

This project will collaborate and coordinate with the research blocks, trial eradication efforts and public education proposed by the Cache Creek Conservancy. The findings of the Conservancy's efforts will be incorporated within Yolo County Flood Control's program. The education efforts of the Conservancy's project will provide the land owner education component which is essential to cooperation and eventual complete eradication of Tamarisk on Cache Creek.

b. Location and/or geographic boundaries of project

The Cache Creek basin is about 24 kilometers (15 miles) northwest of Sacramento. The basin includes Clear Lake, the largest freshwater lake wholly in California. The outlet of Clear Lake is the origin of Cache Creek, which flows generally southeast through the Capay Valley into the Cache Creek settling basin and then into the Yolo Bypass. The Cache Creek riparian corridor is about 172 kilometers (107 miles) long and includes the Cache Creek main stem from the settling basin to the outlet channel of Clear Lake, North Fork Cache Creek and Bear Creek. The lake and creek drain about 2,980 square kilometers (1,150 sq. miles). The riparian corridor is located primarily in Yolo County with the northwest reaches touching into Lake County, northeast reaches into Colusa County and Southern drain extending down through the Yolo Bypass to Solano County. (Attachment 2)

c. Expected benefit(s)

The following benefits are anticipated as a result of the three year's efforts;

- Approximately 30% of the Cache Creek riparian corridor will have directly benefited from the removal of Tamarisk parviflora and other dominant non native species such as Arundo.
- Approximately 30% of the Cache Creek riparian corridor will have directly benefited from the replanting of California Native species specific to the establishment of shaded riverine habitat.
- Increased diversity of plant communities resulting in increased wildlife habitat values for aquatic, terrestrial and migratory species.
- Preservation of mature riparian forest through the elimination of competing and dominant non-native species, particularly Tamarisk and Arundo.
- Native riparian species planted along the corridor would assist with bank stabilization.

- Establishment of Native Riparian Communities would aid in balancing the ecosystem to resist the advances of non-native plant species.
- Improved water quality
- Improved corridor capacity for handling high flows.
- Continued collection of quality data documenting the composition and extent of Cache Creek plant communities.
- Involvement by a broad base of community stakeholders, of all ages, in the restoration and care of an important natural resource in "their own backyard."
- Broad secondary impacts on the overall health of the Bay-Delta ecosystem.
- Tax savings to Yolo County residents through efficient utilization of local resources to effect quality work on the Cache Creek Corridor

d. Background and Biological/Technical Justification

As a highly adaptive, invasive species, tamarisk has pervaded the entire course of Cache Creek, decimating the existing riparian corridor habitat. A 1995 Reconnaissance Report: Cache Creek Environmental Restoration, California by the US Army Corps of Engineers found "that it is critical that these nonnative plant species (tamarisk and arundo) be controlled before they displace virtually all native vegetation. The diverse native vegetation in the watershed corridor once supported many forms of wildlife and fisheries, but has declined as a result of the rapid growth of tamarisk and giant reed." The study further noted that "Without environmental restoration, the riparian corridor, along with wildlife, fish and riparian vegetation, could continue to decline with the creek's current condition and method of operation.... The plants especially endangering the riparian corridor are the tamarisk and giant reed. Containing or removing these plants before they take over the creek is essential to biological diversity. If not controlled, the introduced species could create sandbars at some reaches and scouring depressions at others; the species could also cause bank erosion and scouring, block bridge conveyances with debris, and increase secondary damages to roads and bridges.

In 1996 Yolo County Flood Control and Water Conservation District requested an intensive baseline vegetation study of the Cache Creek corridor, in partnership with the Yolo County Superintendents of School's HAWK AmeriCorps Project. The study was conducted to 1) document the existing plant populations of Cache Creek and 2) to obtain a better understanding of the relationship between non-native plant species and the riparian environment. The role of *Tamarisk parviflora* was of particular concern, given the findings of the 1995 US Army Corps of Engineer's Study. The study noted that, "of the sites observed, Tamarisk parviflora was found at all but one. It is clear that this non-native shrub is a dominant plant within the Cache Creek corridor. The data presented suggests that the amount of Tamarisk found growing in the shrub layer, effects the native plant populations." (Attachment 3) The problem is particularly urgent in the last six miles of the creek where dense populations of tamarisk are creating monocultures which are completely displacing the riparian habitat and adversely affecting the ability of the creek to discharge high flows during flood periods. The combined findings of both the US Army Corps of Engineers and HAWK AmeriCorps indicate the extreme likelihood that Tamarisk will continue its downstream migration at a rapid rate and enter the Sacramento River and Delta systems just West of Sacramento.

The US Army Corps of Engineers found that, "100 years ago the Cache Creek corridor was bordered by approximately 166,2809 hectares (410,880 acres) of riparian forests...With agriculture, cattle grazing, urban growth, and gravel extraction, the riparian vegetation has been reduced to a fraction (less than 10%) of its original extent. The riparian forest has declined most significantly in the lower reaches of Cache Creek from the settling basin to the town of Capay. As a result of the multiple uses of the creek, the ecosystem has been so altered that many native species have been displaced and lost, or are about to be lost, if immediate action is not taken to restore the vital riparian habitats."

e. Proposed Scope of Work

The proposed scope of work is based upon the numerous studies conducted and the

resultant courses of action agreed upon with regards to the restoration and utilization of the Cache Creek Riparian Corridor. While there is widespread agreement and some disagreement concerning the detriments of Tamarisk and Arundo, there is no doubt concerning the overall agreement by stakeholders as to the benefit and indeed need for Riparian Habitat along Cache Creek's corridor. The creation, preservation and restoration of riparian habitat along Cache Creek's banks and levees would increase wildlife use and species diversity, increase native vegetation, and improve water quality. This is in direct accord with Category III rationale to select desirable species and habitats that have experienced the greatest declines. This scope of work will also focus on the riverine habitat which is known to provide broad benefits to a number of priority species and the Bay-Delta Ecosystem.

The U.S. Army Corps of Engineer's Cache Creek Environmental Restoration Reconnaissance Report divides the corridor into seven reaches. (see attachment 1) Year One will focus efforts on the lower six miles of Reach 1. Year Two will focus efforts on critical areas of reaches 4 and 7. Reach 7 has widespread tamarisk and naturally occurring boron. Lessons from the field during Year One efforts would be combined with best practices gathered from similar projects and field trials by the Cache Creek Conservancy, to determine the final selection of areas in the upper watershed. Selection of sites will occur as a joint decision with BLM and USFWS. Year Three will build upon best practices garnered from the previous two years to apply the same approach to critical areas in reaches 2 and 3. Specifically the areas immediately to the west and east of the old Moore Dam site, which contain some of the best remnant riparian vegetation.

The California Conservation Corps will be directly responsible for the "cut and paint" application of the project Tamarisk removal component. The Yolo Conservation Corps will be directly responsible for the removal and clearing of non-native species debris from the immediate area. Both teams will work jointly to revegetate cleared and cleaned areas. The Department of Water Resources and Yolo County Flood Control and Water Conservation District will have responsibility for providing heavy equipment, revegetation materials and the purchase of appropriate herbicides and permits regarding their use. The Yolo County Superintendent of Schools will assist in the recruitment of interested educational communities to produce and donate appropriate native plants. Yolo County Flood Control and Water Conservation District will have direct responsibility for the Project's oversight including; communications with stakeholders and required county, state and federal agencies, obtaining easements and permits as necessary, in addition to the submittal of all financial and technical reports as required by the grant.

f. Monitoring and Data Evaluation

Monitoring and data evaluation will closely follow the format established for the 1996 Baseline Data on the Plant Communities of Cache Creek. Methods will include the use of Aerial slides taken annually by the U.S. Soil Conservation Service to map vegetation located along the Cache Creek Corridor. Regions of homogeneous vegetation will be identified and mapped. Sites will then be selected for "ground truthing" to verify aerial data. Data will be represented according to VEGETATION TYPE and BY SPATIAL ORDER. Comparison to previous year sites and possibly further back for sites of specific interest will be made. Utilizing the methods set forth in this study will insure a continuous stream of comparable data. It is anticipated that the data derived will provide a consistent picture of;

- the relationships between native and non-native plant communities,
- the immediate (one to two year) effectiveness of Tamarisk control and containment efforts,
- the long term viability of revegetation efforts.

Data pertinent to the quality of water and increased capacity of Cache Creek during peak flows will be obtained from the Flood Control District and D.W.R. to ascertain the effect of this project on creek's in channel habitat and flow capabilities. In combination with the above methods the monitoring and data evaluation will provide a clear and seamless picture of the reestablishment of the native riparian plant communities along Cache Creek to provide shaded riverine habitat.

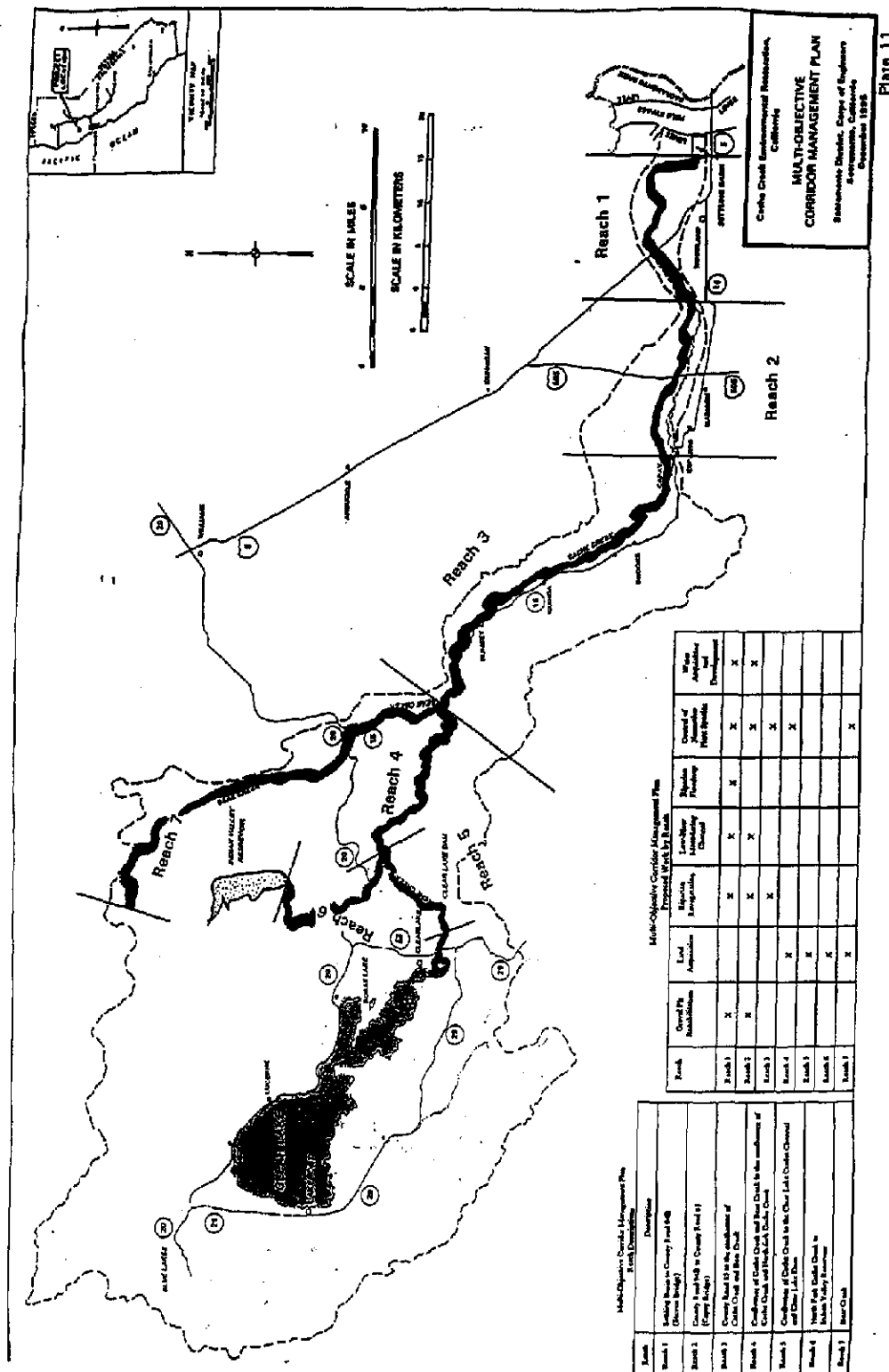
g. Implementability

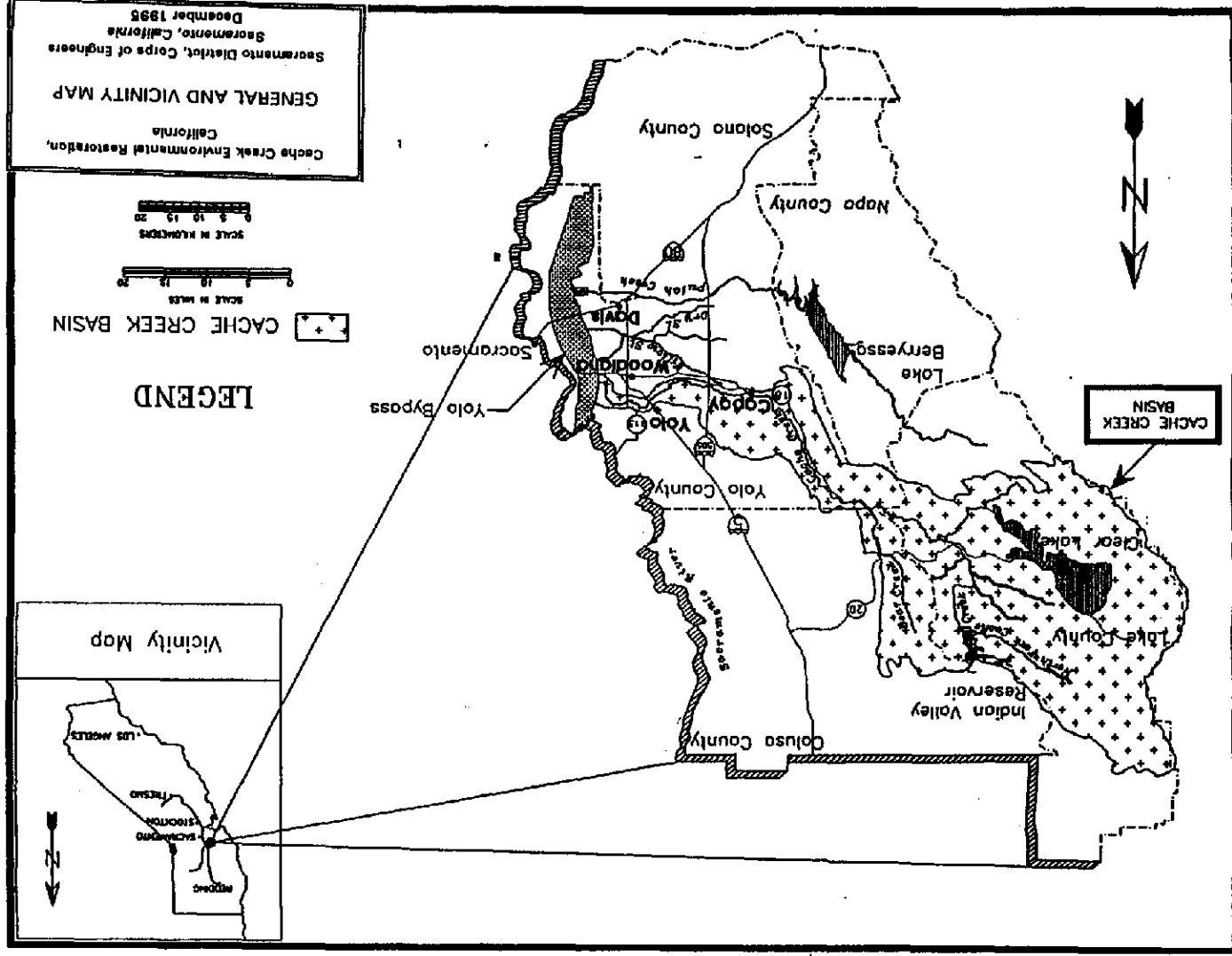
Evaluation by the C.C.C. (California Conservation Corps) of the proposed scope and sequence of this project supports the benchmarks proposed in each year of this project. The C.C.C. has experience in California and as guest collaborators with similar projects in Australia. D.W.R. (Department of Water Resources) has direct responsibility for the maintenance of the Cache Creek Corridor contained within its levees on the last six miles of the riparian corridor and including the Settling Basin. While D.W.R. has the responsibility to maintain the corridor, it does not have the manpower or the resources to effect such an intense effort on its own. There is precedent for work with Yolo County Flood Control and Water Conservation District for previous similar efforts in the past. The Yolo County Conservation Corps has extensive experience in debris removal and maintenance along the entire length of the proposed corridor.

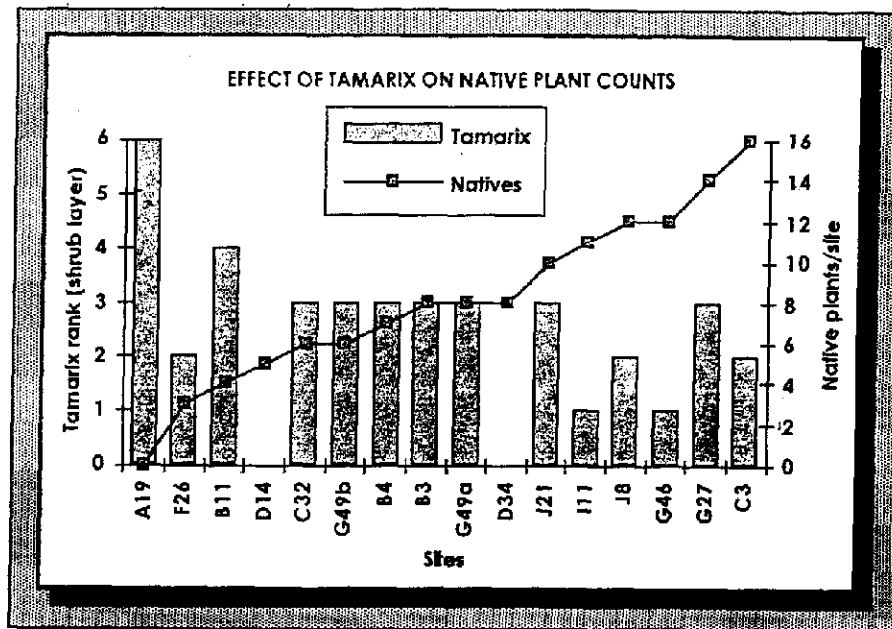
The proposed work timetable is coordinated to fit the weather patterns which impact directly the amount of flow within the Cache Creek Corridor. The nature of the proposed work dictates that the removal and containment of Tamarisk and Arundo occur during periods of minimal flows in the channel. Revegetation efforts must occur when sufficient rainfall will enhance viability through establishment of a deep, quality root system prior to the long hot summer months.

Attachments

1. Multi-Objective Corridor Management Plan showing division of Cache Creek's Riparian Corridor by reaches; U.S. Army Corps of Engineers, *Reconnaissance Report, Cache Creek Environmental Restoration, California*, 1995
2. Cache Creek Basin Map; U.S. Army Corps of Engineers, *Reconnaissance Report, Cache Creek Environmental Restoration, California*, 1995
3. Effect of Tamarix on Native Plant Counts; Burmester, Tracy; *Baseline Data on the Plant Communities of Cache Creek*; Yolo County Flood Control and Water Conservation District, 1996







IV. Costs and Schedule to Implement Proposed Project (no more than 2 pages plus tables and/or figures)

a. Budget Costs

	A	B	C	D	E	F	G	H
	Project phase and task	Direct Labor Hours	Direct Salary &	Overhead Labor	Material & Acquisition	Misc. & other	Total Costs	
1								
2	Year 1						0	
	"cut & paint" lower 6 miles 60 days @ \$1,440	7200	86400				86400	
3								
	Clean & Clear Cuttings 60 days @ \$960	7200	57600				57600	
4								
	herbicide @ 2.5 gal/day				7200		7200	
5								
	replant/crew 1 40 days @ \$1,440 =	4800	57600				57600	
6								
	replant/crew 2 40days @ \$960 =	4800	38400				38400	
7								
	.5 Project Coordinator		31650				31650	
8								
	Plant Materials 6 mi. @ \$600/mi. =					3600	3600	
9								
	Sub Total	24000	271650		7200	3600	282450	
10								
	Admin. Overhead @ .0875			21945			21945	
11								
	Total year 1							
12	Hrs./Costs	24000	543300	21945	7200	3600	304395	
13	Year 2							
	"cut & paint" lower 6 miles 60 days @ \$1,440	7200	86400				86400	
14								
	Clean & Clear Cuttings 60 days @ \$960	7200	57600				57600	
15								
	herbicide @ 2.5 gal/day				7200		7200	
16								
	replant/crew 1 40 days @	4800	57600				57600	
17								
	replant/crew 2 40days @ \$960 =	4800	38400				38400	
18								
	.5 Project Coordinator		31650				31650	
19								
	Plant Materials 6 mi. @ \$600/mi. =					3600	3600	
20								
	Monitor&Maintain Year 1 Crew 2/20 days @ \$960 =	2400	19200				19200	
21								
	Sub Total	26400	290850		7200	3600	301650	
22								
	Admin. Overhead @ .0875			26394			26394	
23								

IV. Costs and Schedule to Implement Proposed Project (no more than 2 pages plus tables and/or figures)

a. Budget Costs

	A	B	C	D	E	F	G	H
2 4	Total year 2 Hrs./Costs	26400	290850	28394	7200	3600	328044	
2 5	Year 3							
	"cut & paint"							
	lower 6 miles 60							
2 6	days @ \$1,440	7200	86400				86400	
	Clean & Clear							
2 7	Cuttings 60 days	7200	57600				57600	
	herbicide @ 2.5							
2 8	gal/day				7200		7200	
	replant/crew 1							
2 9	40 days @	4800	57600				57600	
	replant/crew 2							
3 0	40days @ \$960 =	4800	38400				38400	
	.5 Project							
3 1	Coordinator		31650				31650	
	Plant Materials 6							
3 2	mi. @ \$600/mi. =					3600	3600	
	Monitor&Maintain							
3 3	Year 1 Crew 2/20	2400	19200				19200	
	Monitor&Maintain							
3 4	Year 2 Crew 2/20	2400	19200				19200	
3 5	Sub Total Year 3	28800	310050		7200	3600	320850	
	Admin. Overhead							
3 6	@ .0875			28074			28074	
	Total year 3							
3 7	Hrs./Costs	28800	310050	28074	7200	3600	348924	
	Total 3 Year							
3 8	Project Costs	79200	1144200	76413	21600	21600	981363	

b. Schedule Milestones

3 9	Year 1							
4 0	Task			Schedule (weather permitting)				
	Lower 6 miles control, cleaning, replant			March, 1998				
4 1	Year 2							
	Upper 6 miles control, cleaning, replant			March, 1999				
4 2	Lower 6 miles Monitor, Maintain, Replant			October, 1998				
	Year 3							
	Central 4 miles control, cleaning, replant			March, 2000				
4 3	Year 1 Monitor & Maintain, Replant			November, 2000				
	Year 2 Monitor & Maintain, Replant			November, 2000				
4 4								

c. Third Party Impacts

4 5	• Significant fiscal savings to the taxpayers of California and Yolo County through the coordination of existing C.C.C. manpower and resources to accomplish urgently needed intensive/expensive habitat restoration and preservation at a local level.							
4 6	• See section III-c							
4 7								

V. Applicant Qualifications (no more than 3 pages, including tables)

Yolo County Flood Control and Water Conservation District

The agency has a direct history of environmental activities. The activities dealing specifically with Cache Creek include:

- 30 years experience in maintaining waterways
- 25 years experience maintaining large (300,000 acre feet) reservoir
- Participation in the California Department of Food and Agriculture's Hydrilla Eradication program in Clear Lake (tributary to Cache Creek).
- Monitors some water quality constituents on Cache Creek and some tributaries.
- Participates in U.S.G.S. gauging stations on Cache Creek and some tributaries.
- Participate in a gravel pit test project - reclamation to a groundwater recharge/habitat restoration project.
- Participates on a committee of agencies and organizations, chaired by the Cache Creek Conservancy, interested in the eradication of Tamarisk with the Cache Creek watershed
- 1979 set aside 30 acres on the north side of Cache Creek as a wildlife sanctuary
- 1992 set aside 30 acres of Cache Creek riparian property for sanctuary restoration and environmental education in conjunction with the Yolo County Superintendent of Schools' Project HAWK.
- 1995 Solicited the U.S. Army Corps of Engineers' Reconnaissance Report for Cache Creek Environmental Restoration.
- 1995 Restoration of flood damage upstream of the Capay bridge with Natural Resources Conservation District and AmeriCorps
- 1996 Commission Baseline Data on the Plant Communities of Cache Creek
- 1996 Assisted with bank stabilization upstream of the Rumsey bridge with local landowners.
- contracting, accounting and tracking resources in place to manage complex projects

California Conservation Corps

The California Conservation Corps has;

- 20 years experience in implementing a wide variety of environmental resource projects
- brings together youth and the environment to the benefit of both
- history of collaboration on such projects with public and private entities
- currently administers over 200 contracts in excess of 20 million dollars per year with environmental work,
- contracting, accounting and tracking resources in place to manage complex projects

Yolo County Conservation Partnership

The Yolo County Conservation Partnership, as a component of the California Conservation Corps provides youth ages 16 to 18 the opportunity to;

- serve their communities through environmental activities including restoration, clearing, clearing of flood debris and maintenance
- training in equipment utilized in habitat restoration, cleaning and revegetation
- education awareness and training for principles of conservation
- high safety standards and ongoing training in wildland safety techniques
- young motivated corps members who voluntarily enter this program to make a difference in the habitats of Yolo County.
- experience working in the proposed reaches of the Cache Creek Corridor

Yolo County Superintendent of Schools / Project HAWK

The Yolo County Superintendent of Schools (YCSS) has been actively engaged in Yolo County environmental education since the inception of Project H.A.W.K. (Habitat Alliance and Wildlife Keepers) in 1992. Since then YCSS has collaborated with and supported the efforts of

Yolo County Flood Control and Water Conservation District to

- provide authentic "hands on" environmental learning experiences to the youth of Yolo County,
- support the efforts of alternative education youth to actively restore 30 acres of sanctuary located at the old Moore Dam site in Reach 2,
- provide technical assistance and support for the Community Information component of the U.S. Army Corps of Engineer's Reconnaissance Report on Cache Creek Environmental Restoration
- obtain an environmentally based AmeriCorps grant which conducted the Baseline Data on the Plant Communities of Cache Creek,
- provides the educational component of the Yolo County Conservation Partnership

VI. Compliance with standard terms and conditions (no more than 1 page plus forms)

IN-78

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

California Conservation Corps

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California

OFFICIAL'S NAME

Kurt Schwenk

DATE EXECUTED

July 28, 1997

EXECUTED IN THE COUNTY OF

Sacramento

PROSPECTIVE CONTRACTOR'S SIGNATURE



PROSPECTIVE CONTRACTOR'S TITLE

Conservation Supervisor

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

California Conservation Corps, Delta Service District

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

Yolo County Flood Control and Water Conservation District

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

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OFFICIAL'S NAME

CHRISTY BARTON

DATE EXECUTED

JULY 28, 1997

EXECUTED IN THE COUNTY OF

YOLO

PROSPECTIVE CONTRACTOR'S SIGNATURE

Christy Barton

PROSPECTIVE CONTRACTOR'S TITLE

ASSISTANT GENERAL MANAGER

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

YOLO COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

Letters of Support
Project Epigenesis

1. Department of Water Resources,
George T. Qualley, Chief
Division of Flood Management
2. Bureau of Land Management
Philip L. Damon, Acting Area Manager
Clear Lake Resource Area Office
3. California Conservation Corps
Kurt Schwenk, Conservation Supervisor
Delta Service District
4. City of Woodland
Kris Kristensen, City Manager
5. County of Yolo
Probation Department
Dean C. Alderman, Chief Probation Officer



County of Yolo

GENERAL SERVICES AGENCY

625 COURT STREET, ROOM 203

WOODLAND, CALIFORNIA 95695

(916) 666-8115

KEITH M. OTT
DIRECTOR

July 28, 1997

Yolo County Schools
Attn: Lauri Bailey
1240 Harter Ave
Woodland, CA 95776-6106

Dear Lauri:

This letter is in support of your grant for work along Cache Creek and in some of the park and open space areas of the County.

As you know, Cache Creek is famous for critical habitat that has been threatened by tamarisk species and is creating an environment that is conducive to selecting out monocultural stands if not eradicated. The Parks, Recreation and Wildlife Department has three park sites along Cache Creek that are directly affected by these exotic invasions. All of the sites fall within Reach 3 of the Army Corps of Engineer Reconnaissance Study area.

Vernon A. Nichols Park is located in the town of Guinda. It is 25 acres of habitat and recreation use area. Camp Haswell Park, located near the town of Rumsey is a 5 acre site that provides tremendous interpretive opportunities. Cache Creek Canyon Regional Park is a 750 acre park site that has wildlife, beachfront and wildlife areas. The tamarisk in these park sites along the Creek is so predominant, that if left unchecked, bank erosion will precede at an alarming rate as evidenced by the loss of property in the 1995 and 1997 flood events and alterations of stream flows.

In lending support to your proposal, partnering will benefit everyone involved and in probably ways we haven't even conceived of yet. The Yolo County Conservation Partnership and the California Conservation Corps already help out in the parks and would be a huge boom to the tamarisk problem we are suffering from now. The partnership would maximize resources already in place and help to restore the native plant population and inevitably bring back wildlife. Where this proposal intrigues us is that eradication is needed and the people are in place to make that happen.

I look forward to working on this grant collaboratively when it gets approved. It is exactly these types of cooperative efforts that these grants were earmarked for our collective resources will make Yolo County a better place to reside. If I can be of any further help, please do not hesitate to call.

Sincerely,


Larry Riller, Manager
Parks and Facilities

State of California

The Resources Agency

Memorandum

Date : July 28, 1997

To : Kate Hansel
CALFED Bay-Delta Program
1416 Ninth Street, Suite 1155
Sacramento, California 95814

From : Department of Water Resources

Subject : Tamarisk Removal and Revegetation Proposal

I am writing in support of the Yolo County Flood Control and Water Conservation District's request for funding by CALFED to remove the invasive nonnative shrub *Tamarisk parviflora* from the Cache Creek riparian corridor. I respectfully request that this proposal be given the most favorable consideration.

Lower Cache Creek is heavily infested with tamarisk. Dense growth of tamarisk in the lower portion of Cache Creek impedes the ability of the creek to quickly pass high flood flows which increases the water surface elevation immediately upstream of the infested area. This increase in the water surface elevation could lead to the overtopping of the levees during high flows and flooding of the surrounding area. In addition, Cache Creek carries an unusually high sediment load. The U.S. Army Corps of Engineers and The Reclamation Board have recently completed a project to raise the levees of the Cache Creek Settling Basin in order to ensure that the sediment from Cache Creek is captured in the basin before it enters the Yolo Bypass. The high density of the tamarisk in the Cache Creek channel may cause the sediment to drop before it enters the settling basin thereby gradually raising the elevation of the channel in relation to the surrounding land and increasing the frequency of flooding.

Should tamarisk spread into the Sacramento River and the Delta, it could cause similar channel capacity problems along the Sacramento River and its tributaries. In addition, tamarisk by its invasive nature out-competes and replaces many native species that are necessary for wildlife that use the riparian corridors. Providing habitat for native fish and wildlife through mitigation and riparian restoration projects on the river is already difficult and expensive and would be much more so if tamarisk is allowed to proliferate.

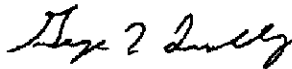
In addition to the immediate benefit of removing tamarisk from Cache Creek, the proposed tamarisk control and replacement project would provide information on how to successfully remove this species in the future wherever it occurs.

Kate Hansel
July 28, 1997
Page Two

For these reasons, I believe that the proposed control of tamarisk would be very beneficial to flood control and native species and urge you to consider this proposal for funding.

If you have any questions, please contact Annalena Bronson at (916) 327-1534.

Sincerely,



George T. Qualley, Chief
Division of Flood Management
(916) 653-6880

cc: Yolo County Water Conservation District
34274 State Highway 16
Woodland, California 95695



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Clear Lake Resource Area Office
2550 North State Street
Utah, CA 95482-3023

July 28, 1997

CALFED
Bay-Delta Program
Category III

Dear Sir/Madame:

The purpose of this communication is to inform your office that the Bureau of Land Management (BLM) is fully supportive of the Cache Creek Epigenesis grant proposal by the Yolo County Flood Control & Water Conservation District for active Tamarix control on lower Cache Creek.

This office is responsible for management of Public Lands along and adjacent to Cache Creek, and also many of its tributaries where the intrusion of Tamarix is becoming an increasing concern. The Bureau is currently in the process, through the land exchange program, of acquiring an additional 11,000 acres, to include a large segment of Bear Creek, an important drainage in the Cache Creek watershed. This perennial watershed has already been extensively invaded by Tamarix, readying this office for a major removal process upon receiving this parcel in ownership.

This proposal, to be performed by the California Conservation Corps, will be a positive step toward eventual elimination of this intrusive and damaging species from the watershed. The California BLM remains a staunch supporter of this grant proposal and looks forward toward a healthy Cache Creek watershed.

Sincerely,

A handwritten signature in dark ink, appearing to read "Philip L. Damon", is written over the typed name.

Philip L. Damon
Acting Area Manager

CALIFORNIA CONSERVATION CORPS*Delta Service District**Sacramento Satellite**2800 Meadowview Road**Sacramento, CA 95832**(916) 262-2145 FAX (916) 262-2970*

To: Whom it may concern
From: Kurt Schwenk
Conservation Supervisor
California Conservation Corps
Date: July 28, 1997
Subject: Letter of commitment for Cache Creek Epigenesis Project

The California Conservation Corps (CCC), as a CALFED 1997 Category III proposal co-signatory, is committed as to assist with Cache Creek Epigenesis, the Tamarisk control and replacement project proposed by the Yolo County Flood Control and Water Conservation District in partnership with Yolo County Superintendent of Schools Project H.A.W.K., The California Department of Water Resources, and the U.S. Bureau of Land Management.

The CCC will provide contracted organized crew resources to this project to cut and clear the invasive non-native Tamarisk as detailed in the project description. The CCC further will provide contracted workers to assist in the operation of a native plant nursery that will provide for native revegetation for this project, and will assist in the replanting, maintenance and monitoring. The CCC is willing to commit to this project for a minimum of three years upon execution of signed contracts by the collaborating partners as described in the project proposal.

The CCC has over 20 years experience in implementing a wide variety of ecological restoration projects in such diverse areas as stream restoration, soil erosion control, removal of non-native species, and revegetation efforts. The CCC brings together youth and the environment to the benefit of both. The CCC has a long successful record as a collaborator with many public and private non-profit agencies. The Cache Creek Epigenesis Project will not only provide significant environmental benefits, but will also give CCC Corpsmembers the learning and work experience that will benefit them individually.

If there are any questions regarding this letter of commitment, please contact CCC Conservation Supervisor Kurt Schwenk at (916) 262-2145.



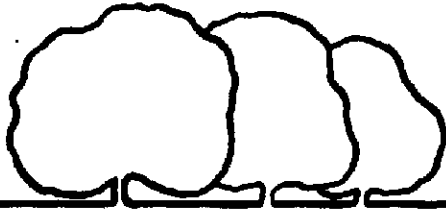
CCC Ecological Restoration Project Services

The CCC has over 20 years of experience in implementing a wide range of ecological restoration and environmental mitigation projects in areas ranging from stream restoration to soil erosion control. The CCC works with local, state and federal resource management agencies to lay out the best implementation plans and enlists a work force of over 200 experienced field supervisors to direct over 1800 young men and women on restoration projects. CCC resources are normally organized in crews of 10 to 15 corpsmembers directed by an experienced staff supervisor. The CCC can provide resources in smaller sized operational units including mini-crews of 5 to 8 corpsmembers or individual interns. The CCC charges for a portion of its operational costs for the project services we provide to your agency. Cost estimates (hourly rates or fixed price) are available upon request.

Restoration Services

- **Erosion Control** including straw mat placement, tree planting, native species planting, check dam installation, gabion basket placement, and levee brush removal.
- **Fisheries work** including fish tagging, fish screen maintenance, fish salvaging, in-stream structure design and placement, removal of in-stream barriers, native planting for shade, installation of spawning structures and substrates in streams and lakes,
- **Water Conservation** work including leak detection using electronic listening devices, water auditing of small and large scale properties, repair of irrigation systems, installation of low flow water management devices and distribution/presentation of water education materials. CCC is a signatory to the California Urban Water Council Best Management Practices.
- **Specialty Services** including monitoring activities, fish or habitat surveys, data collection on endangered species, geographical information system data collection and entry, native plant seed collection, propagation of native species at two CCC native plant nurseries (Napa Valley and Sierra foothills), and transfer of representative plant species for wetland habitat creation as mitigation for transportation or construction projects.
- **School Education Programs** including development and presentation of interactive K-12 environmental education programs on subjects ranging from watershed (Adopt A Watershed) issues to used oil recycling. CCC also has the experience and capability to involve students and teachers in translating in-school education to community environmental stewardship and service projects (over 100,000 students served).

Contact Walt Auburn, Associate Director of Development at (916)341-3173 or Margaret Behan, Development Specialist at (916) 341-3155 for more information on CCC Ecological Restoration Services.



City of Woodland

CITY MANAGER

300 FIRST STREET

WOODLAND, CALIFORNIA 95695

(916) 661-5800

FAX (916) 661-5813

July 28, 1997

TO WHOM IT MAY CONCERN:

This letter is in support of the Yolo County Flood Control and Water Conservation District's grant application for the removal of tamarisk along portions of Cache Creek in Yolo County.

Tamarisk is a non-native plant which has displaced beneficial wildlife habitat along many portions of Cache Creek upstream from Woodland. Control of this noxious and invasive weed will assist in restoring a healthy ecology in these areas. The City of Woodland has consistently supported efforts to maintain water quality along Cache Creek, a major source of our community's underground water supply, and I believe this grant application represents such an effort.

If I can answer any questions regarding this matter please contact me at (916) 661-5800.

Sincerely,


Kris B. Kristensen
City Manager



COUNTY OF YOLO

PROBATION DEPARTMENT

218 WEST BEAMER STREET, WOODLAND, CALIFORNIA 95695

PROBATION (916) 666-8015 JUVENILE HALL (916) 666-8011

FAX NO. (916) 666-879



DEAN C. ALDERMAN
CHIEF PROBATION OFFICER

COMMUNITY CORRECTIONS

July 25, 1997

CALFED BAY-DELTA

TO WHOM IT MAY CONCERN:

As Chief Probation Officer for Yolo County, I wish to state my support for the concept of the CALFED BAY-DELTA grant. This grant would provide collaboration between the Yolo County Flood Control District and the Yolo County Conservation Partnership (YCCP). It would also offer consistent and reliable funding for the YCCP program. Funding from this grant would greatly aid the County's serious financial problems [a -8.4% compounded annual growth rate of tax dollars over 5 years, \$22 million in 89/90 to only \$13 million in 94/95.] to support the YCCP. Such relief would allow the YCCP to pursue 'good works' and not rely solely on finding jobs that would generate income.

Additionally, this grant would permit a vital and enriched nexus for school curriculum. The YCCP has a school requirement of two hours in class and another two hours on the grade. These four hours must meet certain curriculum requirements and some of the jobs that we have previously been required to do to earn income, have required a stretch to meet those curriculum needs.

If there is anything that I can do to further state my support of this grant. Please let me know.

Sincerely,

Dean C. Alderman,
Chief Probation Officer